

Title	A NEW GENUS AND TWO NEW SPECIES OF THE ORDER TANAIIDACEA FOUND AT SETO
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Citation	PUBLICATIONS OF THE SETO MARINE BIOLOGICAL LABORATORY (1952), 2(2): 53-68
Issue Date	1952-10-05
URL	http://hdl.handle.net/2433/174687
Right	
Type	Departmental Bulletin Paper
Textversion	publisher

A NEW GENUS AND TWO NEW SPECIES OF THE ORDER TANAIDACEA FOUND AT SETO*

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With 7 Text-figures

In two of my previous papers (SHIINO, 1951, 1951a), I reported five species of the Tanaid crustaceans occurred in the shore waters at Seto. Here I describe three more species which have been added to my collection from this locality afterwards. Of these, one appears to represent the type of a new genus of the family Tanaidae, being characterized by the possession of appendages much simplified in their structure. The other two are also new to science and can apparently be designated to the genus *Apseudes* of the family Apseudidae. They are remarkable for the fact that they have come from the littoral zone, while the majority of the forms belonging to this genus was discovered from the sea-bottom, if not abyssal in habitat.

Apseudes algicola n. sp.

(Figs. 1—3)

Habitat: Littoral, found among algae or on the surface of sponges. Eleven females and two males.

A dimorphism is observed in the gnathopoda of the male and female.

Female: Depressed, elongate, somewhat attenuating posteriorly; 3.0 mm long excluding appendages and 0.6 mm wide at the second pereiomere. Integument rather thin, transparent, colorless. All somites more or less setose both on dorsal face and on free borders.

Carapace one fifth the length of the body and nearly as long as wide. Anterior margin, without forming a rostrum, round and continuing back to the

* Contributions from the Seto Marine Biological Laboratory, No. 176.

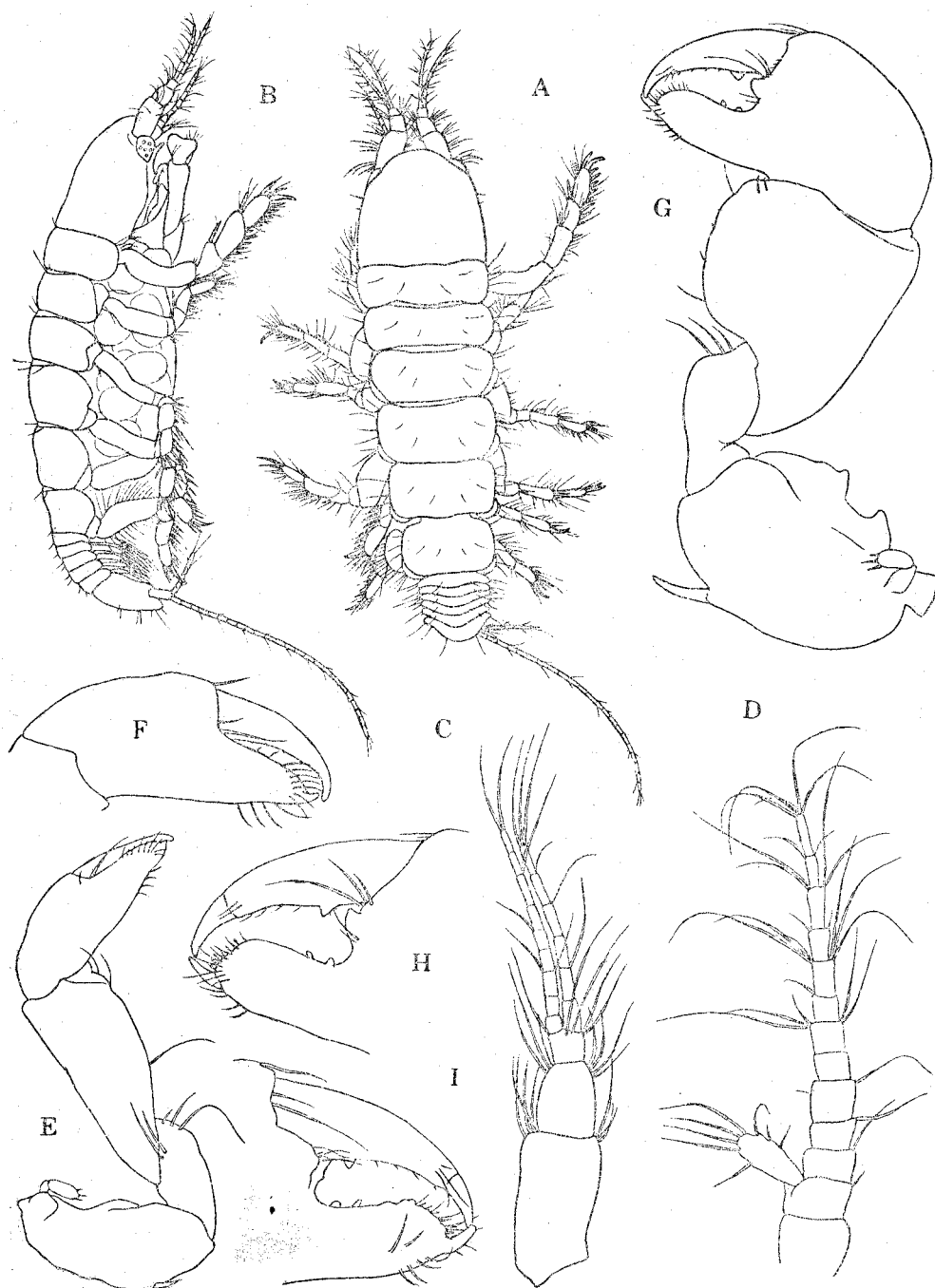


Fig. 1. *Apscudes algicola* n. sp. A-F, female; A, dorsal view; B, lateral view; C, antennule; D, antenna; E, right gnathopod; F, chela of the same; G-I, male; G, left gnathopod; H, chela of the same, viewed from the outside; I, same, viewed from the inside. A-B \times 27; C, E-G \times 90; D, H, I \times 123.

slightly-curved lateral sides. Posterior border almost straight. Dorsal face convex. Eye lobe distinct, but remaining to expose a small part of it dorsally and lacking retinal pigment.

Pereion a little more than half the body length, with the somites contiguous and rectangular having widely round sides. First somites (second pereiomere) as long as the second and shorter than others which are subequal to one another. It is as wide as the carapace, the remainder decreasing in width from front to rear. Small, semicircular coxal plates present on the pereiomeres from the third backwards.

Pleon six-segmented, almost as long as the carapace, and narrower than the last pereiomere. First five segments similar in size, transversely linear with round lateral ends. Last somite equals in length to the preceding five combined. It is as long as wide, slightly attenuating backwards, and ending in a crescent median lobe between the uropoda.

Antennule as long as the carapace, biramous, with hairy joints. First of the three joints of peduncle very thick, elongated, twice as long as the second. Third shortest and thinnest. Two subequal flagella shorter than the peduncle, the outer member eight- or nine-jointed and the inner six-jointed. Antenna shorter than the antennule composed of about thirteen joints tapering little by little towards the tip. Its distal half encircled by long setae at the end of every two joints. Second joint bears an elongate-oval, setiferous scale. Epistome has a sharp spine. Labrum linguiform, with its margin a trifle sinuous on the median. Labium bilobed, furnished with an oval, setaceous accessory lobe on either side. Molar process of mandible columnar, with striated triturating surface. Incisor process five dentate, accompanying four or five forked spines at the base. Lacinia mobilis, divided into four teeth, present only on the right side. Apical joint of palp with a row of setae along the inner border, whereas the other joints setose only in their terminal parts. Inner lobe of maxillula has five ciliated spines and the outer lobe nine apical teeth besides two smaller sub-apical ones. Maxilla divisible into four lobes. Innermost of these broadest, retreating from others and emarginated by short hairs mingled with some long spines. Second lobe much narrower, bearing forked spines. Third with simple, curved spines and the outermost acuminate, ending in a single one. Basis of maxilliped wider distally than proximally, having the endognath fringed by blunt spines along the inner half of its round margin. First joint of the palp short, as wide as the basis, with a minute spine at the outer angle. Second the same in width, but far longer, and with double row of spines along the inner border. Remaining two joints much narrower, bearing a single spine-row. Epipodite a lozenge-shaped plate, without marginal setae except for having two short filiform processes.

Gnathopod slender, with a minute, two-jointed, setae-tipped exopodite. Basis and ischium fused into a single article bearing a small spine on the posterior border. Merus and carpus obliquely articulated with each other, but on the same straight line. The latter longer than the former and the both with some hairs. Chela more than twice longer than wide. Immobile finger shorter than palm, ending in a small tooth, and with a row of setae along the cutting edge as well as on the outer border. Palm also with a few hairs close

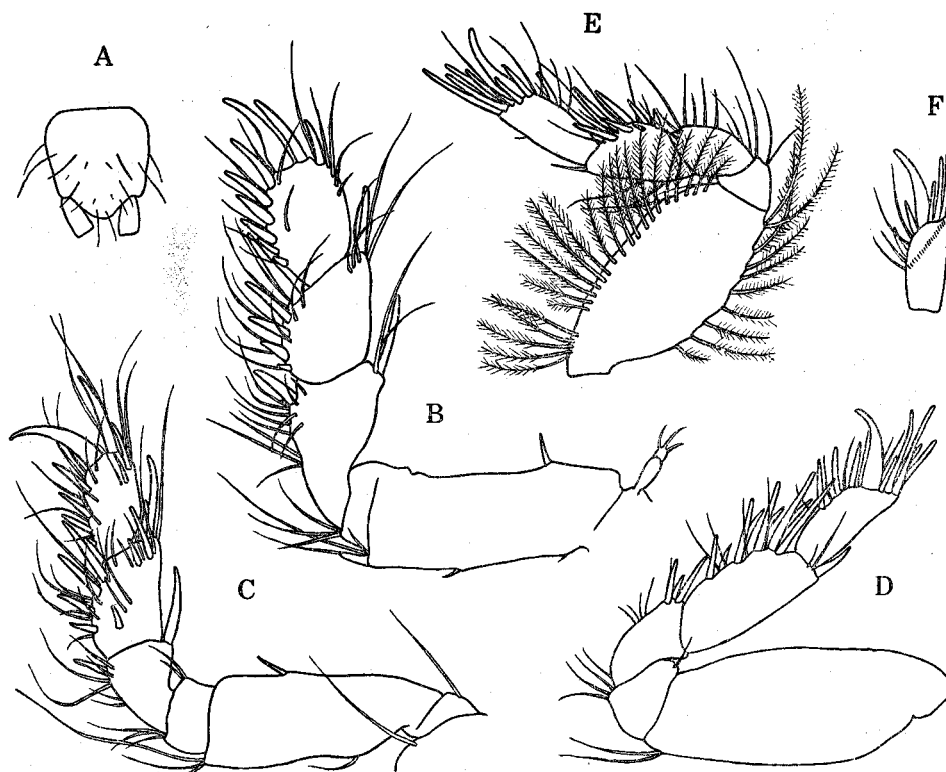


Fig. 2. *Apsudes algicola* n. sp., female. A, pleotelson, dorsal view; B-F, pereopoda from the left side; B, second; C, third; D, sixth; E, seventh; F, same viewed from the inside. B-F $\times 90$; A $\times 123$.

to the base of the finger. Movable finger curved well in its attenuated terminal part and with very minute hairs on the cutting edge. Other pereopoda ambulatory, having segments heavily armed with spines and setae. Segments of second pereopod broader than those of the succeeding limbs. It has a two-jointed exopodite. Its basis somewhat incompletely separated from the short ischium and with a spine on the dorsal border as well as at the end of the

ventral. Merus has a longer terminal spine on each of the two margins. Carpus and propodus provided on the ventral border with five and six spines respectively; the former with one spine at the dorso-distal angle, while the latter with two. Dactylus unguiform, only slightly larger than the terminal spine of propodus. Third and fourth limbs resemble the second in structure, but possess narrower joints. Their basis distinctly separated from the ischium and without terminal spine. Carpus and propodus have additional spines on the outer surface. Dorso-distal spine of merus is replaced by a hair in the fourth limb. Succeeding two pereopoda different from the foregoing ones in the arrangement of spines, in having fewer setae and somewhat broader basis. Merus with three spines at the ventro-distal angle, but devoid of the dorsal one. Ventral spines of carpus more numerous than in the foregoing limbs and forming a double row. This joint bearing three dorsal spines in the fifth limb, while only one in the sixth. Propodus with several spines at its dorso-distal end. Basis of seventh limb has a row of long plumose setae along the dorsal as well as the ventral borders, the propodus possesses an oblique row of very minute hairs on the outer face close to the distal end, and the merus lacks the ventral spine. In other points, this limb resembles the sixth. Marsupium large and sac-like.

Five pairs of pleopoda biramous. Protopodite with short plumose setae on both margins, and the two, narrow, subequal rami with similar, but much longer marginal hairs. Uropod biramous, filiform, attaining about half the length of the body. Peduncle one-jointed, much thicker and longer than any of the articles of the rami and with some hairs at the end. Endopodite composed of twenty-seven or more joints, and about four times as long as the six-jointed exopodite. Besides terminal hairs, both rami scatteredly setose along their lengths.

Male: Distinguishable from the female by having a larger, stouter gnathopod. Basis of this limb much broader than in the female, with a stronger spine on the ventral margin and with two irregularly-shaped processes on the dorsal. Carpus expanded ventrally so as to form a round plate. Palm of chela broad, furnished with some hairs on the border articulating with movable finger and a triangular tubercle between this and the base of immovable finger. Immovable finger more or less cylindrical. Its round end hairy, besides projecting a claw. Cutting edge bears two small tubercles in the proximal part. Dactylus, when closed, leaves a space between itself and the immovable finger and has a triangular tubercle on the inner border close to the base. Otherwise, no differential characters between the two sexes.

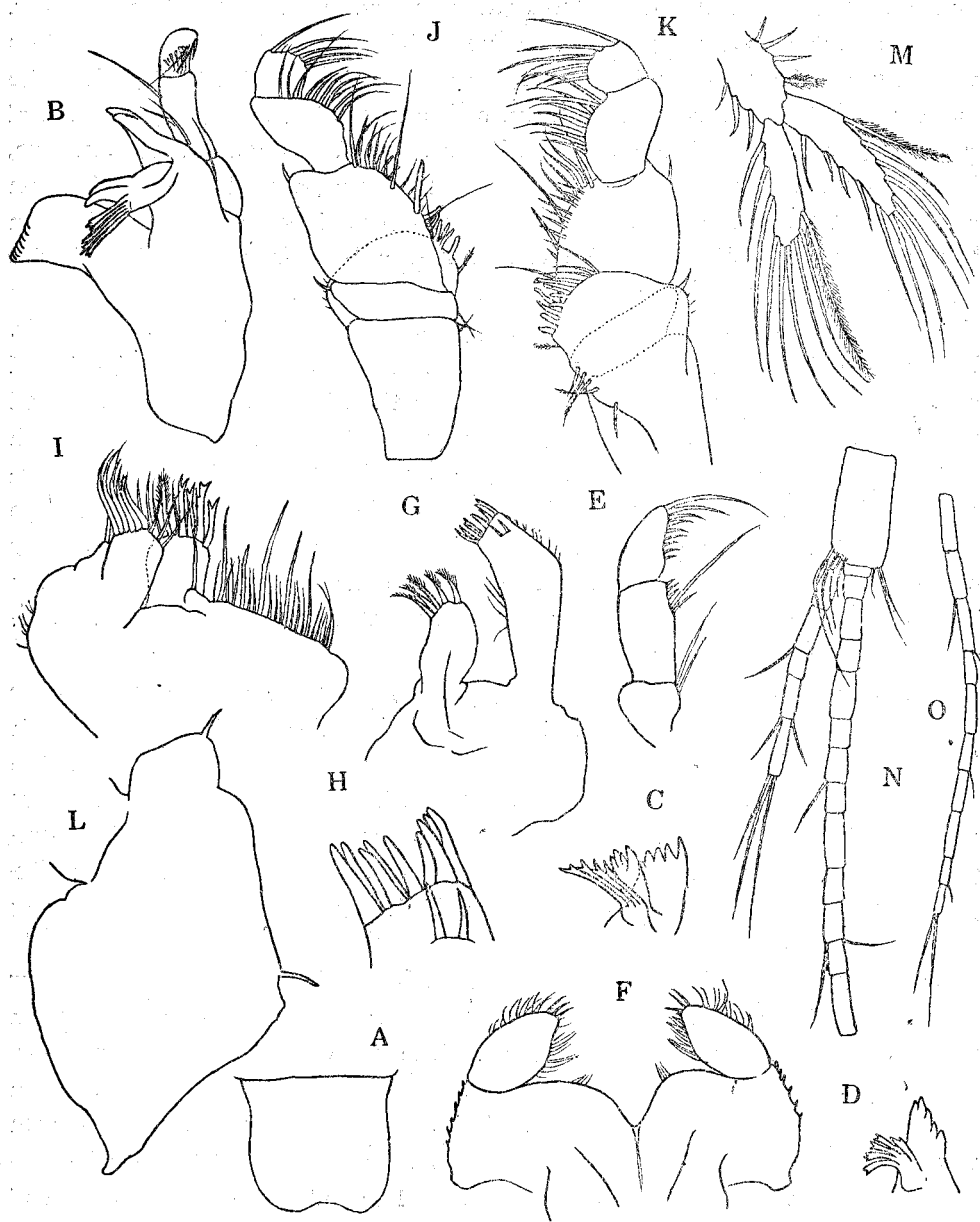


Fig. 3. *Apsoudes algicola* n. sp., female. A, labrum; B, left mandible; C, incisor process of the same; D, incisor process of right mandible; E, mandibular palp; F, labium; G, maxillula; H, tip of outer lobe of the same; I, maxilla; J, maxilliped, viewed from the outside; K, same, viewed from the inside; L, epipodite of the same; M, pleopod; N, uropod; O, tip of endopodite of the same. M-O $\times 123$; A-G, J-L $\times 176$; I $\times 348$; H $\times 500$.

Apseudes littoralis n. sp.

(Figs. 4 & 5)

Habitat: Littoral, found among barnacles grown over coast rocks. Four female specimens.

Female: Depressed, elongated and narrow, slightly attenuating posteriorly; 2.2 mm long exclusive of the appendages and 0.42 mm wide at the second pereiomere. Somites more or less hairy, semitransparent and colorless without any pigment.

Carapace less than one fourth the length of the body, longer than wide and a trifle wider posteriorly than anteriorly. Anterior margin triangular having a median point and very slightly wavy on either side of it. Lateral border also undulated and posterior side widely convex. Surface nearly hairless. Eye lobe a crescent shape in dorsal view and lacking retina pigment.

Pereion half as long as the body, with somites and coxal plates sparingly hairy. First somite (second pereiomere) has lateral parts somewhat produced forwards and equals in length to the third which has round sides. Succeeding two longer than these, subequal to each other and with two tubercles on either lateral border, one in its anterior part, and the other at about its middle. Remaining somites intermediate in length, having two sides inclined inwards in front of as well as behind the single lateral tubercle. Posterior border of them concave. Crescent-shaped coxal plates occupy the anterior part of the lateral sides in the first somite, while the posterior part in the others. Marsupium enormous.

Pleon two sevenths the length of the body, with somites hairy both on surface and on margin. First five somites very short antero-posteriorly, somewhat turning backwards in their round lateral ends. Last somite as long as these combined, longer than wide, with a V-shaped posterior and undulated lateral borders.

Antennule longer than the carapace, biramous, with more or less hairy joints. First joint of peduncle columnar, very thick and long, occupying less than half the entire length of antennule. Second joint not attaining the half of the first, but longer than the third. Two rami filiform, with the outer member five-jointed and longer than the two-jointed inner member. Antenna shorter than the antennule, composed of about ten sparingly-setose joints. Second joint bears a short, slender, setae-tipped scale. Labrum and labium ordinary in structure, the latter bearing a fusiform accessory lobe on either side. Molar process of mandible columnar, striated on its triturating surface. Incisor process four-toothed, accompanying five or six ciliated spines at the

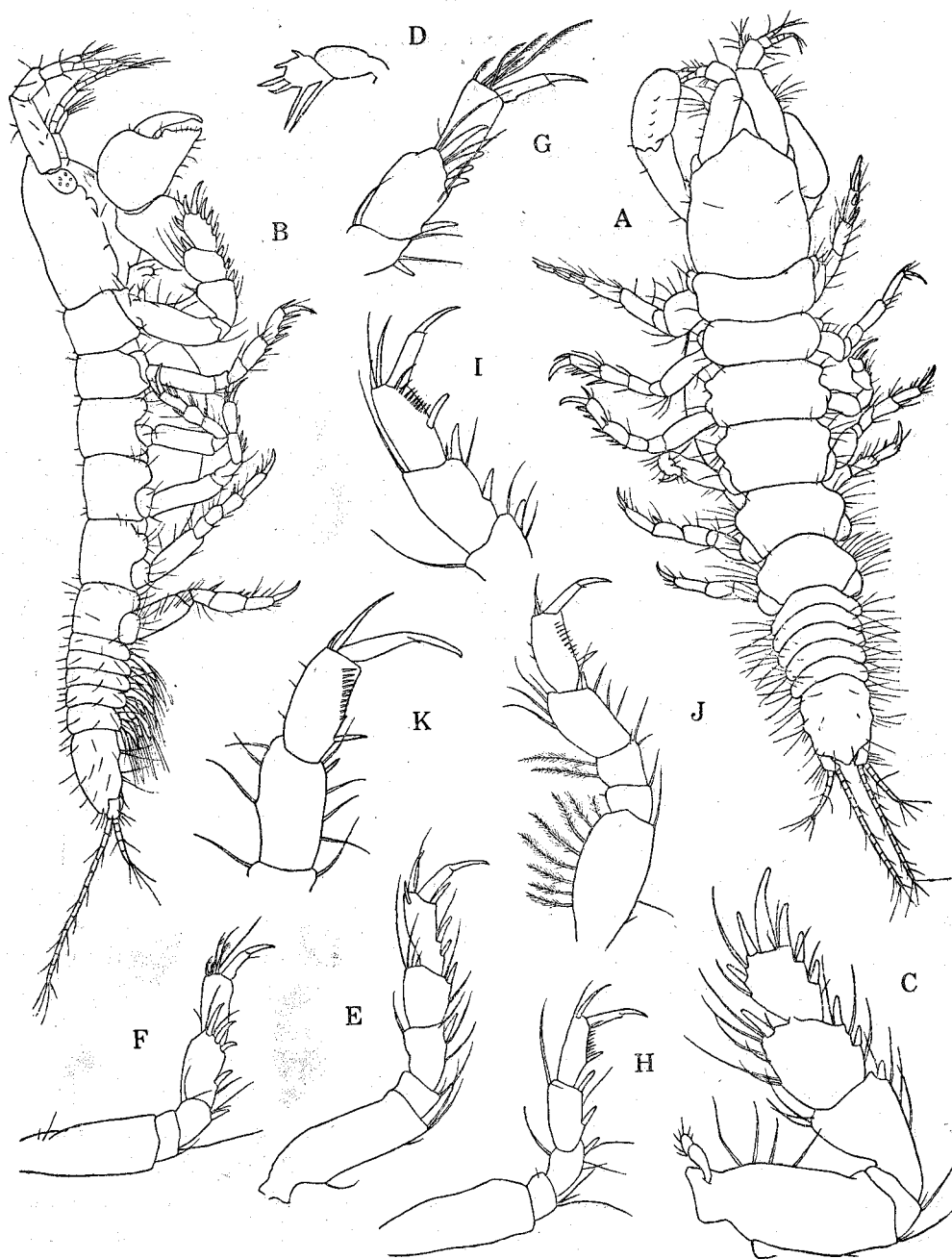


Fig. 4. *Apscaudes littoralis* n. sp., female. A, dorsal view; B, lateral view; C-K, pereopoda from the right side; C, second; D, exopodite of the same; E third; F, fifth; G, same; H, sixth; I, same; J, seventh; K, same. A, B \times 40; C, E, F, H, J \times 90; G, I, K \times 123; D \times 176.

base. Lacinia mobilis tridentate, present only on the left mandible. First joint of palp short, spinous at its end. Second far longer, with some short spines along the terminal part of the inner margin. Third curved, with a spine-row along its entire length. Maxillula has four ciliated spines on the inner lobe and about twelve teeth on the outer. Two-jointed palp directs backwards ending in two long hairs. Of four lobes of maxilla, the second one from the outside projecting beyond others and the innermost retreating. These two have a row of simple setae along their borders. Third lobe with forked spines and the outermost fringed by ciliated spines besides two long simple ones. Basis of maxilliped rectangular, with a long ciliated spine at the inner distal angle. Gnathobasis hairy, and provided with apical rows of short spines besides two retinacula on the inner border. First joint of palp short, bearing a long ciliated spine on the inner border, second much longer, also with a number of similar spines besides more numerous simple, shorter ones. Both of them with a short spine on the outside. Apical two joints wearing long simple spines along their inner border. Epipodite curved, irregular in shape ending in a large spine.

Gnathopod robust, with joints expanded and arranged in an S-form. Basis and ischium fused into a single joint which bears two-jointed, setae-tipped exopodite at the narrowed base and some setae on the well-curved ventral border. Merus small, perpendicular to the basi-ischium. Carpus as long as basi-ischium, triangular, widening distally. It articulates with the merus by the proximal half of its ventral border and bearing two acuminate processes as well as a few setae on the distal half. Chela less than twice longer than broad, one and half times as long as basi-ischium and with a sparse row of setae on the ventral border. Immovable finger shorter than the swollen palm, from which it arises with a broad base and narrows towards the tip. Cutting edge has a long hair and a triangular tubercle at the base, which is followed by a convexity bearing a row of fine hairs, and ends in a pointed process. Movable finger curved not much, ciliated on the inner border and with a setae-bundle at the base of sharp claw. Segments of second pereopod broader than those of the succeeding limbs. Basis distinct from the very short ischium, furnished with a two-jointed minute exopodite and some long setae on the dorsal border. Segments from the merus to propodus armed with setae and spines. The latter is present one on merus at the ventro-distal angle, two on carpus on the ventral border and one on the dorsal, three on propodus on the ventral side and two on the opposite side. Other pereiopoda more slender and purely ambulatory in function. Third and fourth limbs identical with each other in structure. Their basis lacks dorsal setae, merus as well as carpus bears a single spine at the ventro-distal angle and propodus has three

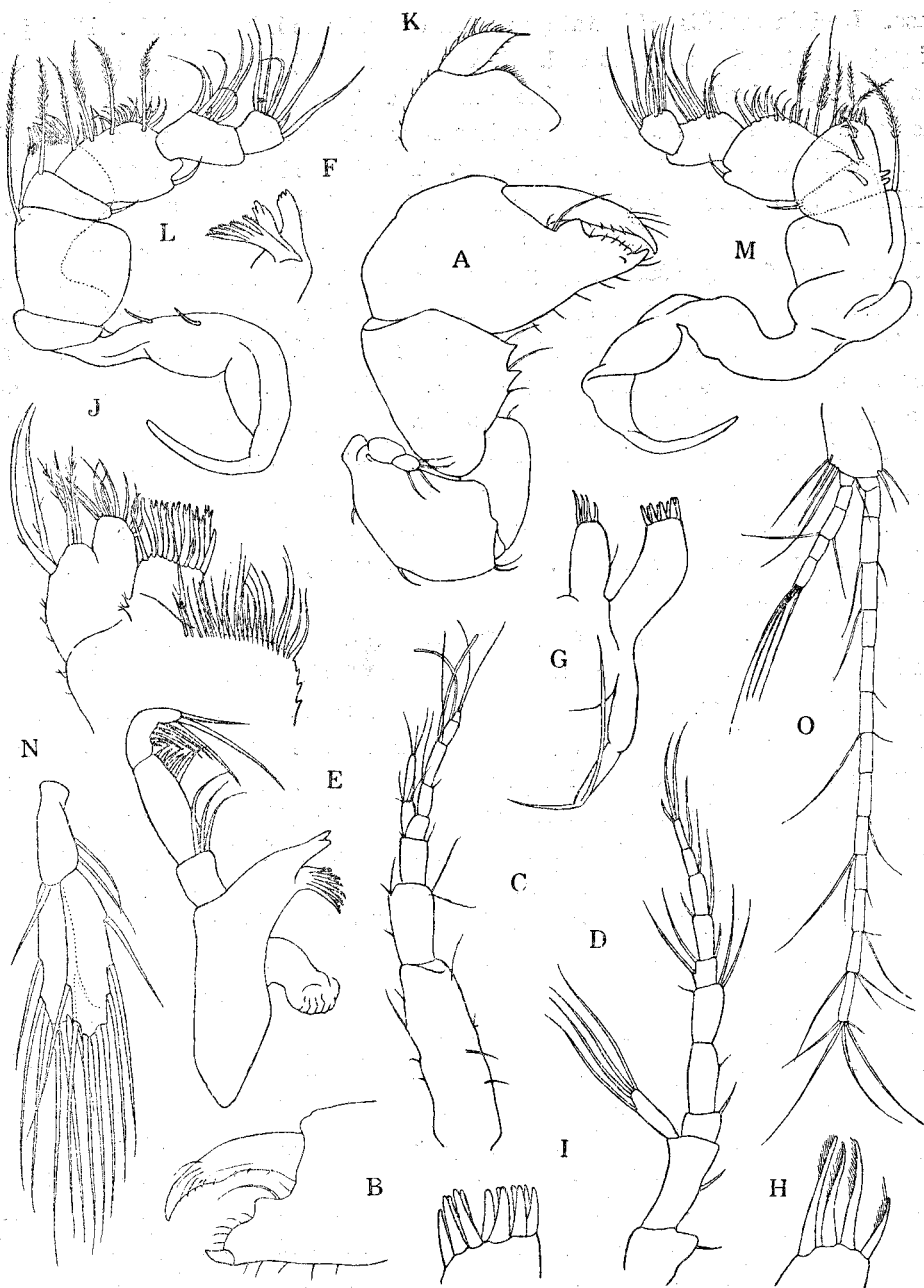


Fig. 5. *Apseudes litoralis* n. sp., female. A, right gnathopod; B, chela of the same, viewed from the inside; C, antennule; D, antenna; E, right mandible; F, incisor process of left mandible; G, maxillula; H, inner lobe of the same; I, outer lobe of the same; J, maxilla; K, right half of labium; L, maxilliped, viewed from the outside; M, same, viewed from the inside; N, pleopod; O, uropod. A-D $\times 90$; O $\times 123$; E, G, K-N $\times 176$; F, J $\times 548$; H, I $\times 500$.

on the ventral border and two at the dorso-distal end. Other pereopoda resemble them except in the following points. In fifth limb, carpus has one spine on the ventral side and four on the posterior surface along the terminal border. Propodus bears several pectinate slender ones at the dorso-distal angle. Carpus of sixth limb possesses two ventral spines but lacks the distal one of the posterior surface. Its propodus has, besides a slender dorso-distal one, a spine about the middle of the ventral border from which minute hairs are arranged in a row up to the end of the segment. This segment of the seventh pereopod resembles that of the sixth, but the carpus has only a ventro-distal spine, the merus bears two, long, plumose, dorsal hairs instead of the ventral spine and the basis is provided with a dorsal row of similar setae.

Five pairs of pleopoda composed of a slender protopodite and two, narrow, subequal rami. Protopodite with two setae on the inner side besides with an apical one and the rami fringed by longer setae. Uropod only slightly shorter than the pereion, and with two unequal filiform rami. Its peduncle non-articulated, rather thick, bearing some setae at the end on the outside as well as on the inside. Outer ramus five-jointed, nearly a quarter as long as the inner ramus which consists of about fourteen joints. Both are scatteredly setose besides having an apical bundle of long setae.

Genus *Metatanais* n. gen.

Body cylindrical, with carapace, six pereiomeres, five pleomeres and pleotelson distinct. Eye well developed. Antennule uniramous, three-jointed; antenna lacking a scale, six-jointed. Mandible without palp. Maxillula with inner lobe atrophied, but with palp well-developed. Maxilla absent. Gnathopod and second pereopod devoid of exopodite. Coxal plates fused with somites. Pleopoda degenerated in a great measure. Uropod uniramous.

In the cylindrical body, in the uniramous antennule, in the character of the oral appendages and in the absence of the exopodite from the first two pairs of thoracic limbs, the new genus belongs, without doubt, to the family Tanaidae. It is in accord with *Heterotanais*, *Paratanais*, *Typhlotanais*, and *Pseudotanais* in the number of segments composing the two pairs of antennae, but can be distinguished from them, before everything, by its unbranched uropoda. Moreover, it is different from them except the last named genus in the pleopoda being highly degenerated. In this point, the new genus is closer to *Pseudotanais*. This genus, however, has atrophied eyes and the fifth and sixth pereiomeres which are far longer than other somites. *Agathotanais*, *Leptognathia*, *Leptognathiella*, *Tanaella*, *Strongylura*, and *Strongylurella* also bear some

resemblance to the present genus in the possession of rudimentary pleopoda or in the complete absence of these. But, they are quite different from *Metatanais* either in the character of the two pairs of antennae, or in that of the uropoda, besides in the poor development of the eye in all of them.

Metatanais cylindricus n. sp.

(Figs. 6 & 7)

Habitat: Littoral, found among algae, on the surface of ascidians or of sponges. Neither rudiments of oostegite nor male genital papillae on the seventh pereiomere are discovered in any of the twenty-three specimens collected. They may probably represent the female sex.

Female: Body cylindrical, 1.87 mm long excluding antennule and 0.54 mm wide at the sixth pereiomere. Integument rather thick, opaque and whitish without developing any pigment except that of eye. A narrow, semitransparent band borders the posterior side of carapace and of each pereiomere. A similar longitudinal band also separates a small lateral area from the mid-dorsal region on both sides. All somites almost destitute of setae.

Carapace one fifth the length of body, as long as wide, and narrowed forwards with the two sides arcuate but converging. Anterior margin a flattened V-shape, being obtusely angular on the median and with a pair of lateral excavations in each of which a round, thickly pigmented eye lodges. Posterior border nearly straight. Dorsal face strongly convex.

Pereion a little less than half the body length. Somites highly arched dorsally, with lateral parts bending downwards. Each of them shows a rectangular appearance when viewed from above, borders between consecutive two of them being transversely straight. Fourth somite (fifth pereiomere) longest, foregoing two and succeeding one somewhat shorter and equal to one another. First somite again shorter and the last shortest, being half as long as the fourth. All of them subequal in width. Lateral margins acuminate in the first three somites, but more or less round in others. Coxal plate undefined in any of them.

Pleon a little longer than a third of the body, six-segmented. First five somites occupying about two thirds of the pleon and subequal to one another both in length and in width. They are strongly convex above, with lateral parts bending down, and concave on the ventral side. Last somite thick dorso-ventrally, twice as wide as long, cordiform having the posterior border round, but slightly produced on the median.

Basal joint of uniramous antennule very thick, columnar, half as long as

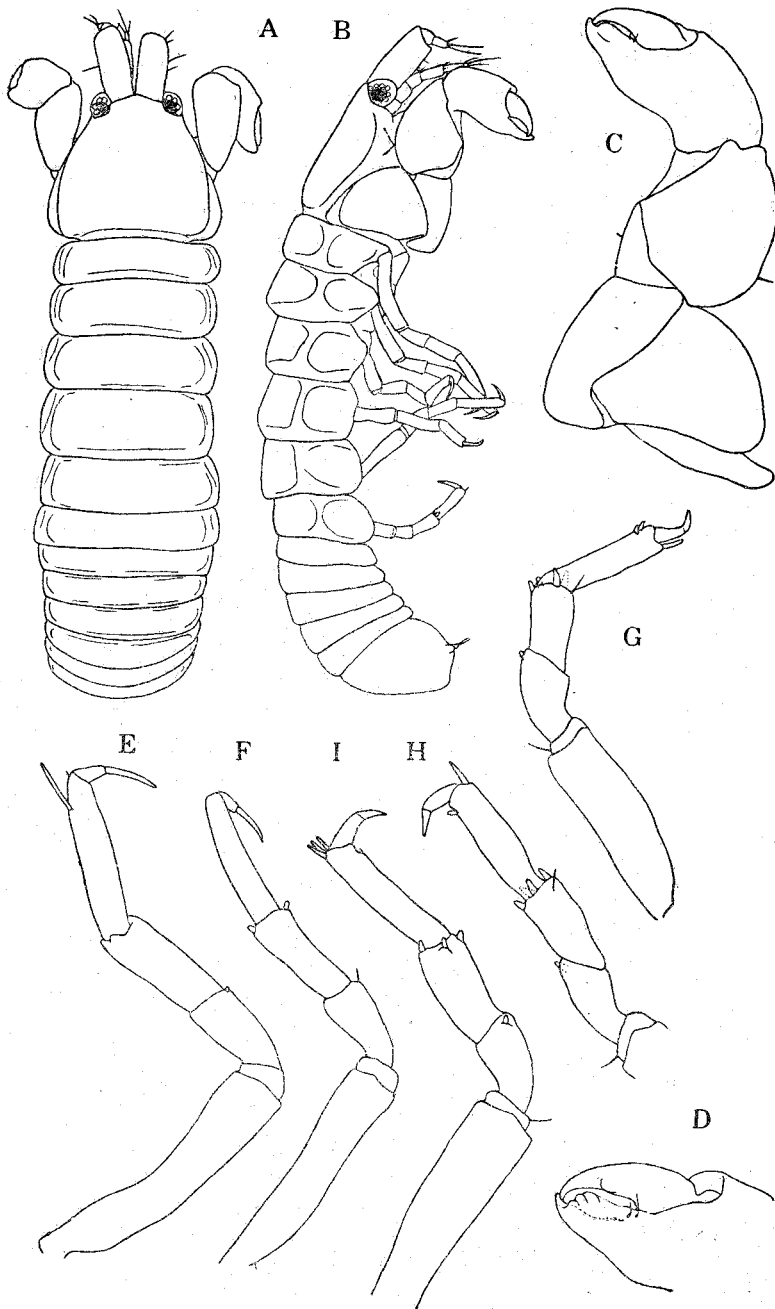


Fig. 6. *Metatanais cylindricus* n. gen. & n. sp., female. A, dorsal view; B, lateral view; C-I, pereopoda from the left side; C, gnathopod; D, chela of the same; E, second; F, third; G, fifth; H, sixth; I, seventh. A, B $\times 45$; C $\times 90$; E-I $\times 124$; D $\times 133$.

the carapace, and sparingly setaceous on the ventral border. Flagellum very short and thin, two-jointed, and tipped by a few long setae. Antenna almost as long as the antennule and composed of six joints, of which the very minute terminal joint bears long hairs. Molar process of mandible rather thick, with uneven triturating surface. Incisor process divided at its tip into unequal denticles and devoid of the basal setae-row. Lacinia mobilis and palp absent. Maxillula lacks the inner lobe. Its narrow, elongate outer lobe has an apical

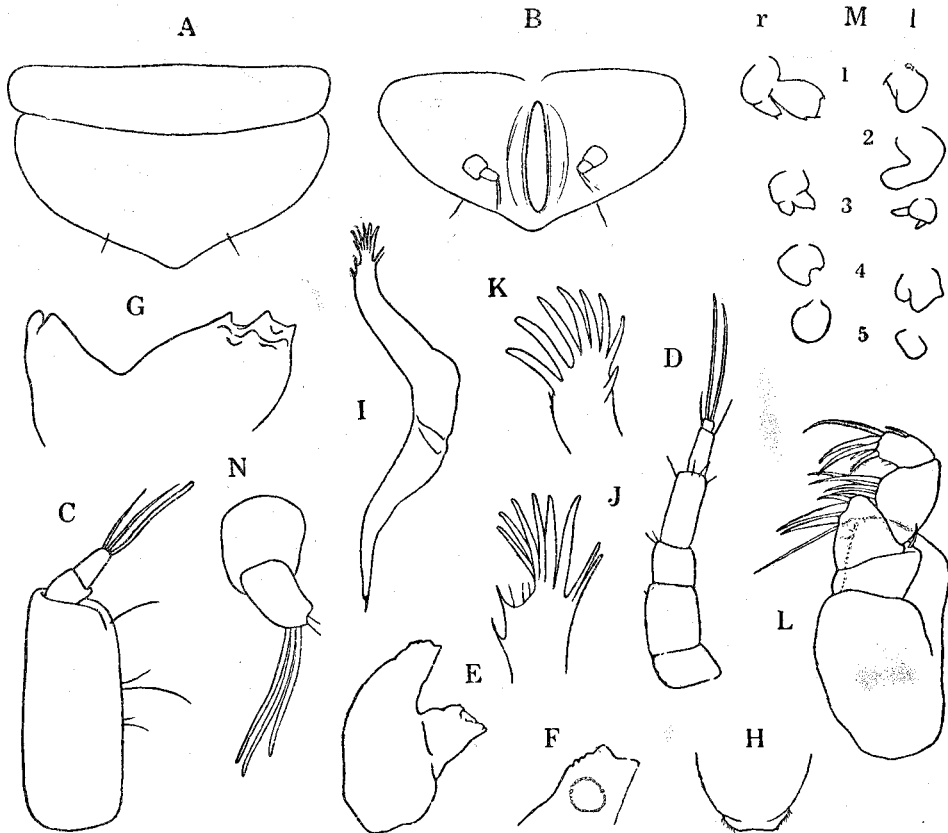


Fig. 7. *Metatanais cylindricus* n. gen. & n. sp., female. A, fifth pleomere and pleotelson, dorsal view; B, pleotelson, ventral view; C, antennule; D, antenna; E, mandible; F, incisor process of the same; G, apical part of mandible; H, labrum; I, maxillula; J, tip of the same; K, same; L, maxilliped; M, pleopoda in situ (r, right side, l, left side, numerals indicating the number of pleopoda); N, uropod. A, B $\times 90$; C, D $\times 123$; E, M, I, L $\times 176$; F, G, M, N $\times 348$; J, K $\times 500$.

ring of eight spines besides a few setae, and continues at the base to a long, posteriorly directed palp which ends in a short spine. Maxilla undiscovered. Maxilliped of right and left tightly fused together on the coxal segment.

Gnathobasis broad, but remaining to possess a single long spine at the inner distal angle. First joint of palp short, with a minute spine at the outer distal angle, second triangular, with stouter ones on the broader inner border, and the rest two narrower, also spiny along the corresponding border.

Gnathopod stout, extending forwards beyond the carapace, and thicker proximally rather than distally. Basis fused with ischium forming a triangular segment. It has curved anterior margin and articulates with the carapace by the straight posterior side and with the merus by the entire distal border. Merus comparatively larger than usual, curving at the base so as to embrace the distal part of basis from below. Carpus has dorsal side evenly round. Propodus narrower than carpus, twice as long as broad. Immovable finger shorter than palm, more or less straight, with an inconspicuous tubercle close to the base of the terminal claw. Dactylus sharp and well curved. Other pereopoda slender ambulatory, and almost devoid of hairs. They have a distinct but very short ischium and resemble one another, differing only in the number of spines found on the joints from merus to propodus. Third and fourth pereopoda are identical even in this point. Merus has a minute spine at the ventro-distal angle in the fifth to seventh limbs, but lacks it in the others. Carpus bears two distal spines in the third and fourth limbs, four in the succeeding two and three in the last. Propodus possesses a dorso-distal spine in the second limb, a ventro-distal one besides the dorsal one in the sixth, two ventral and one dorsal in the fifth, three dorsal in the seventh, and none in the remainder. Terminal claw of dactylus distinct. Basis as well as ischium spineless in all pereopoda.

Pleopoda very rudimentary, represented by minute biramous lobes or by single lobes, or sometimes entirely atrophied. Uropoda present on the ventral side of the pleotelson as minute, two-jointed, setae-tipped appendages.

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